

Yr 10 Science Revision – Semester 1

Topics to cover

**** Look over the following dot points and add your own notes to give further detail to the topic.**

1. Getting into Genes (Chapter 2 text)

DNA, GENES AND CHROMOSOMES

- describe the structure of DNA
- outline the process and importance of DNA replication
- distinguish between alleles and genes, autosomes and sex chromosomes
- define 'karyotype' and describe its use
- explain how the gender of a baby is determined
- compare processes of mitosis and meiosis
- define the term 'mutation'
- explain how mutations can reduce an organism's chance of survival
- identify examples of how mutations can be beneficial

INHERITANCE

- outline the role that DNA plays in inheritance
- distinguish between genotypes and phenotypes
- define the following terms: dominant, recessive, heterozygous, homozygous, diploid, haploid

- explain how both genetic and environmental factors determine phenotypes
- predict the outcome of genetic crosses using Punnett squares (including sex linked inheritance).
- interpret pedigree diagrams

2. Evolution (Chapter 3 Text)

THE THEORY OF EVOLUTION BY NATURAL SELECTION

- define the following terms: evolution, selective agents (biotic and abiotic), natural selection, species, convergent, divergent evolution
- suggest how genetic characteristics may have an impact on survival and reproduction
- describe the process of natural selection using examples
- explain the importance of variations in the process of evolution

3. Chemical Patterns (Chapter 4 Text)

ATOMS AND THE PERIODIC TABLE

- recall the characteristics and location in the atom of protons, neutrons and electrons
- explain how the electronic structure of the atom determines its position in the periodic table and its properties
- recognise that elements in the same group of the periodic table have similar properties
- recognise that the atomic numbers of elements in the periodic table increase from left to right across each period
- distinguish between the atomic number, mass number and relative atomic mass of an atom
- describe common properties of elements in each of the alkali metals, halogen and noble gas groups of the periodic table

- distinguish between the properties of metals, non-metals and metalloids

ELECTRON SHELLS AND BONDING

- describe the structure of atoms in terms of electron shells
- explain the movement of electrons to higher energy levels and the emission of light when they return to a lower level
- describe ionic bonding in terms of the formation of ions and relate it to the number of electrons in the outer electron shells of atoms

VALENCY AND CHEMICAL FORMULAE

- define the valency of an element as the number of electrons an atom needs to gain, lose or share to fill its outer shell
- relate the valency of an atom to its group in the periodic table
- deduce the formula of a variety of simple covalent and ionic compounds from the valency of their constituent elements

REVISION QUESTIONS

1. Look over the revision questions given and make sure you understand the answers to all set questions.
2. Go over all topic tests and make sure you understand all questions where you had difficulties.

